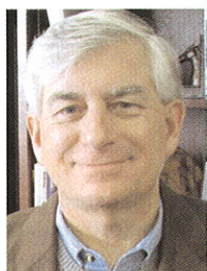


## HIGH-TECH SUPERHIGHWAY

Ultrafast Internet2 creates a potentially impressive revenue tool

BY JIM NICHOLS

KENTUCKY HAS upgraded and greatly expanded its access to the national Internet backbone for academics in the past year. The ultrahigh-speed Internet2 is creating an infrastructure for potential high-tech economic impact across the commonwealth.



Allen Lind, Vice President for Information and Technology, Kentucky Council on Postsecondary Education

For more than a decade, the University of Louisville had accessed Internet2 via a node in Indianapolis and the University of Kentucky via Atlanta. But as the national network rebuilt to improve data transmission from 10 billion bits (gigabits) per second to 100 Gps, the state gained its own switching node in Louisville early last year and created an optical fiber network to connect schools and libraries across the commonwealth.

It's paid off already in more than \$1.5 million in research grants, said Allen Lind, vice president of Information and Technology, Kentucky Council on Postsecondary Education. And it's expected commercial ultrahigh-speed service will follow in the foreseeable future because the private sector can build on to the educational infrastructure at a lower cost than creating a network from scratch.

Since UofL and UK connected to the special, education-only technology in the mid-1990s – part of an early 200-university national network – the effects have consistently broadened, said Lind.

"This is so new and growing," he said. "I think we're just beginning to see its potential."

For now, Kentucky academics are networking with counterparts across the world. For example, an education committee with the 2010 Alltech FEI World Equestrian Games is crafting plans to provide global educational access to the games in Lexington.

Internet2, also known as NewNet since its recent national upgrade, pro-

vides unparalleled capability. According to Lind, the average home cable-based connection has a "character pipe" of 10 million characters per second. By comparison, Internet2 provides 10 billion characters, which is 1,000 times faster.

The entire contents of the Library of Congress – a common Internet volume metric – would take more than a decade to download on today's average home connection but about 13 seconds on Internet2, Lind said.

A partnership with the Mid-Atlantic Gigapop in Philadelphia for Internet2 is expanding the applications available on the Kentucky Regional Optical Network, or KyRON.

"These new applications can let (Kentucky) students explore the effects of HIV on the immune system with an emergency room doctor in Pennsylvania, learn about operation of a modern astronomical observatory with scientists in Hawaii or take a guided tour of Earth's polar regions with NASA scientists and more – all from the convenience of the classroom," said UK President Lee Todd.

What's this mean for Kentucky's economy?

A major Internet2 node in Louisville opens the door to leasing capacity for commercial traffic to telecommunications companies in the future.

"That creates a telecommunications infrastructure that can then become

available," Lind said. "We're kind of an anchor tenant."

Meanwhile, he said, Internet2's existence brought a \$1.4 million grant to improve UK's connectivity to the national drug research network and \$150,000 for a UK computer scientist researching how to improve how the Internet functions.

The network bolsters UK's goal of becoming a top 20 research facility, and because the network enhances education across Kentucky, it improves the state's economic forecast.

More Kentucky content on the network should pique more people's interest in the state, which could lead to more



Using high-bandwidth Internet2 access, students can direct telescopes at 13,800-foot-high Mauna Kea in Hawaii.

tourism, Lind said. Combine that with the other Internet2 economic catalysts and a multifaceted revenue tool emerges.

"We're just putting the basics in place and nobody knows how far it will go," he said. ■

Jim Nichols writes for The Lane Report. (editorial@lanereport.com).

### How it's being used

A few examples of how Internet2 can enhance and expand instruction and research in Kentucky include:

- **K-20 interactive collaboration** – A science teacher in Owsley County can dissect a frog for her class and talk about this virtual dissection with researchers from Murray State University and Stanford University in real time.
- **Remote instrumentation** – A student in Frankfort High School taking a biology class can use a microscope at Lehigh University in real time.

- **Resource-sharing** – Math teachers in Taylor County can interactively participate in professional development workshops at the University of North Texas and Western Kentucky University without leaving their classrooms.

- **Digital libraries** – A student in Bowling Green can search and retrieve samples from KET's videos, Kentucky History Center's artifacts and Filson Club's photographs as she works on her multimedia assignment.

- **Performing arts** – A violin student in Paducah can audition with the Manhattan School of Music via Internet2 videoconferencing.